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THE QUESTION OF NON HUMAN PRIMATES MORALITY

He who understands baboons
would do more toward metaphysics
than Locke.

Ch. Darwin, *Notebook*

Introduction

Walking in Darwin's footsteps, numerous researchers have turned toward evolutionary theory for "the examination of a hypothesis concerning the factual matter of whether, and in what sense, and to what degree, human morality is the product of the process of biological natural selection."[1] The questions of morality have been partly taken over from the hands of philosophers and "biologized" as E.O. Wilson already recommended more than three decades ago.[2] In spite of the fundamental disputes undertaken in general evolutionary theory, many specific empirical disciplines work on the adequate description and explication of particular morality-related issues. Neuroscience tries to map the "moral brain," meanwhile by examining children in their earliest years, developmental psychology studies ontogenetic changes in the processes of moral reasoning and the emergence of the distinction between moral and other norms. Moral psychology studies universal cognitive and emotional psychological mechanisms related with morality (e.g. moral judgments, moral dilemmas) and "universal across cultures moral domains." Recently, primatology has also contributed to the "biologizing of morality" enterprise, mainly by searching for and examining "proto-morality" or "the evolutionary building blocks of morality" in non human primates (hereafter termed NHP). The primatological studies are a part of the emerging literature on the "animal morality" question,[3] but without a doubt research on NHP cur-

[1] R. Joyce, *The Evolution of Morality*, The MIT Press Cambridge, Massachusetts 2006, p. 143.

[2] E.O. Wilson, *Sociobiology: The New Synthesis*, Harvard University Press, Cambridge 1975, p. 562.

[3] C. McGinn, *Animal Minds, Animal Morality – In the Company of Animals*, "Social Research" 1995, vol. 62, no. 3, pp. 731–748; M. Bekoff, *Social Play Behavior: Cooperation, Fairness,*

rently provides the most robust and well documented account of moral related phenomena in non human animals.

There is a relatively small but growing body of studies hinting that NHP posses some cognitive and emotional capacities closely connected with what we commonly understand as morality but it should be clearly noted that only a few primatologists have directly analyzed the question of "proto-morality" or "the evolutionary building blocks of morality" in NHP.[4] About 30 years ago, H. Kummer informed in us in his seminal paper of the complete lack of interest in the subject of NHP morality.[5] From the larger perspective, M. Bekoff and J. Pierce recently claimed that "the idea of animal morality would have been met with eyebrows and a 'surely you must be joking!' dismissal."[6] Most primatologists to date have avoided the word "morality," using instead the more neutral and technical-sounding or more specific terms such as pro-social behaviour, cooperation, biological altruism and "reading other minds" capacities. In contrast to the relatively small amounts of primatological works analyzing the problem of morality in NHP directly, there are many studies referring to those results because the data collected by primatologists are being used as an argument for or against the thesis that human morality (or moral sense) is innate.[7]

Trust, and the Evolution of Morality, "Journal of Consciousness Studies" 2001, vol. 8, no. 2, pp. 81–90; *Wild Justice and Fair Play: Cooperation, Forgiveness, and Morality in Animals*, "Biology and Philosophy" 2004, vol. 19, pp. 489–520; *Animal Passions and Beastly Virtues: Cognitive Ethology as the Unifying Science for Understanding the Subjective, Eotional, Empathic, and Moral Lives of Animals*, "Human Ecology Review" 2006, vol. 13, no. 1, pp. 39–59; P. Shapiro, *Moral Agency in Other Animals*, "Theoretical Medicine and Bioethics" 2006, vol. 27, pp. 357–373; L.A. Bates et al., *Do Elephants Show Empathy?*, "Journal of Consciousness Studies" 2008, vol. 15, no. 10–11, pp. 204–225; M. Bekoff, J. Pierce, *Wild Justice. The Moral Lives of Animals*, University of Chicago Press, Chicago 2009.

[4] H. Kummer, *Analogs of morality among nonhuman primates* [in:] G.S. Stent (ed.), *Morality as a biological phenomenon*, University of California Press, Berkeley 1980, pp. 31–47; Ch. Boehm, *The Evolutionary Development of Morality as an Effect of Dominance Behavior and Conflict Interference* [in:] M. Gruter, P. Bohannan, Ross-Erikson (eds.), *Law, Biology and Culture: The Evolution of Law,* Santa Barbara 1983, pp. 134–147; F. de Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals*, Harvard University Press, Cambridge 1996; *idem*, *Homo homini lupus? Morality, the Social Instincts, and our Fellow Primates* [in:] J.P. Changeux et al. (eds.), *Neurobiology of Human Values*, Springer, Berlin 2005, pp. 17–35; *Primates and Philosophers*, Princeton University Press, Princeton 2006; D. Harnden-Warwick, *Psychological Realism, Morality, and Chimpanzees*, "Zygon" 1997, vol. 32, pp. 29–40; J.C. Flack, F. de Waal, *Any Animal Whatever: Darwinian Building Blocks of Morality in Monkeys and Apes*, "Journal of Consciousness Studies" 2000, vol. 7, pp. 1–29; P. Boomgaard, *Perspectives on de Waal's Primates and Philosophers: How Morality Evolved*, "Current Anthropology" 2008, vol. 49, no. 4, pp. 695–704; H. Lyna, B. Franksc, E.S. Savage-Rumbaughb, *Precursors of Morality in the Use of the Symbols "good" and "bad" in Two Bonobos (Pan paniscus) and a Chimpanzee (Pan troglodytes)*, "Language & Communication" 2008, vol. 28, no. 3, pp. 213–224.

[5] H. Kummer, *op.cit.*, p. 33.

[6] M. Bekoff, J. Pierce, *op.cit.*, pp. 2–3.

[7] E.g. C.J. Cela-Conde, *On the Phylogeny of Human Morality (Ten Years Later)*, "Human Evolution" 1990, vol. 5, no. 2, pp. 139–151; B.N. Waller, *What Rationality Adds to Animal Morality*, "Biology and Philosophy" 2002, vol. 12, pp. 341–356, R. Joyce, *op.cit.*, pp. 75–85; J.R. Monroe, A. Martin, P. Ghosh, *Politics and an Innate Moral Sense*, "Political Research Quarterly" 2009, vol. 63, no. 3, pp. 621–632.

Referring both to the latest findings and most often mentioned and discussed experiments undertaken in primatology and to the commentaries upon them, I am going to analyze two topics. At the outset I would like to explore the fundamental problems associated with the definition of morality being used in studies about the question of morality in NHP (Section II). Then I will take a critical look at the best candidates for "moral prerequisites" in NHP, mainly empathy and the sense of justice (Sections III and IV). It should be treated as both a critical review of the heated dispute on the NHP morality topic and rather an invitation to discussion than an attempt to make definitive statements about this subject. In the final conclusions I would like to clarify the contribution of studies on morality in NHP to the general "biologizing morality" approach.

Problems with morality defining

Morality is notoriously hard to define and there is strong disagreement about how best to understand what morality is. In spite of this, one may notice that according to the dominant approach, the authors working on the topic under consideration have chosen (sometimes implicitly) a particular definition of morality and then presented the evidence and arguments confirming or denying it adequateness to the NHP. Simply how we define morality determines whether and to what extent NHP have basic elements of it. The content of the definition chosen determines later considerations and conclusions, because the line between non morality, proto-morality, the necessary but not sufficient components for morality, and indeed the genuine morality are to be found elsewhere in various attempts to describe "what morality is." However, the more accurate and controversial question is: where to place the border between a prosocial behaviour (that benefit other individuals and helps to maintain social peace and connections) and "genuine" morality.[8]

By now we know from long term, controlled investigations that social traits like parental care, co-operative foraging, hunting and breeding, communal nursing as much as reciprocal kindness, exist to a considerable extent in the animals kingdom, especially in NHP. They have evolved specific emotional devices and perhaps emotional-based motivations needed to form and maintain a simple form of society. Grooming, removal of parasites and protection, traits common among social mammals and birds, cannot have been produced by prudent calculation because those animals are not capable of computational work on this

[8] We should have in mind that Darwin has already sketched a shift from the social to the moral animal. The main Darwinian idea is that sociality was primary and the next evolutionary step "invented" morality. F. de Waal has been exploring such an idea in his conception that "morality [is] a direct outgrowth of the social instincts that we share with other animals" (*Primates and Philosophers*, p. 6). But Darwin strongly believed, some degree of "intellectualization" is necessary for the emerging "moralization." As R. Joyce said: "one thing about which Darwin is obviously correct (...) is that *something* has to be added to pro social inclinations before we can speak literally of a 'moral sense', for a conscience requires a fair degree of cognitive sophistication" (*op.cit.*, p. 101).

scale. Nor are prosocial behaviours a deceptive cover for some other motives and purposes – animals are not skilled fulltime hypocrites. Social higher animals, including NHP, did not build their relatively stable societies by plotting their way out of a Hobbesian original war of all against all.[9] What makes them able to live together, to co-operate in remarkable tasks of hunting, building and joint protection has to be their natural (biological) disposition formed by evolutionary forces. Yet is this enough for morality?[10] Where should one draw the line that separates highly socialized species from those which exhibit morality? Where exactly does morality start?

In the broadly understood literature of evolutionary science there exist a variety of definitions of morality. However, authors more frequently do not ask ontological questions (what is morality?), but give a list of features or conditions or mental capacities necessary for morality (what is necessary for morality to exist? what is the "set of required components of morality"? what are the indicators of morality? what are the "empirical markers of morality"?). Yet the common definitional usage treats it as an empirical phenomenon functioning in a certain society (humans or NHP or even non primates animals) determining in social practice what is recognized or only fulfilled as "good" and "bad." Therefore, the authors have been interested about "social morality" – a description of moral practices exercised in particular society. Primatologists especially have never asked the question of whether ethics (normative, postulative morality) exists in NHP. Monkeys and apes do not make ethical considerations. As C. Zimmer put it clearly, "chimps may be smart, but they don't read Kant."[11] In spite of practicing a descriptive account, it is difficult to specify the ontology of morality in a way that is noncommittal between moral theories and that does not import prescriptive considerations into what ought to be a descriptive task. The case is even more complicated, because as M. Ossowska correctly notices, "establishing the borders of the morality notion is already a moral issue."[12]

One may distinguish analytically between the different types of morality definitions by using criteria that sometimes may overlap each other. So called **psychological** definitions for the existence of genuine morality require specific internal states or processes which occur in consciousness.[13] Most of the classical theories developed in philosophy have expressed a need for some kind of psycho-

[9] The group of primatologists (R.W. Sussman, P.A. Garber, J.M. Cheverud, *Importance of Cooperation and Affiliation in the Evolution of Primate Sociality*, "American Journal of Physical Anthropology" 2005, vol. 128, pp. 84–97) have analyzed the literature on primate sociality, and concluded that the vast majority of primate social interactions are affiliative rather than agonistic and aggressive. They prefer to play or groom than fight. For example, in pro-simians, the most ancestral of existing primates, an average of 93.2% of social interactions are affiliative.

[10] We know about the self-sacrificial behavior of ants or bees and according to the common opinion it does not constitute morality. Some have erroneously claimed that the undoubted social complexity displayed by chimpanzees, and the fact that they appear to follow rules, suffices for chimpanzees to be granted a moral sense (e.g. D. Harnden-Warwick, *op.cit.*).

[11] C. Zimmer, *Whose Life Would You Save?*, "Discover" 2004, vol. 25, p. 5.

[12] M. Ossowska, *Socjologia moralności. Zagadnienia podstawowe (Sociology of Morality. Basic Problems)*, PWN, Warszawa 1986, p. 253.

[13] E.g. moral judgments, other's wellbeing regarding intentions and motives or even conceptualizations of them, deliberative self-reflective considerations on moral values, personal

logical occurrences for morality. P. Kitcher argues that morality involves much more than a mere "ability to adjust desires and intentions to the perceived wishes or needs of others." It covers a capacity for reflection on a variety of viewpoints, which gives rise to the standpoint for impartiality and "the genuinely moral sentiments", that make us value "what is 'useful and agreeable' to people" in general.[14] It is rare but primatologists also use psychological criteria to define morality – for example H. Lyna, B. Franksc and E.S. Savage-Rumbaughb recognize that "at its very essence, morality must rely on moral judgments."[15] Meanwhile, also because of a lack of access to the subjective internal world of NHP, so called **behavioural** definitions restrict themselves to the necessary occurrence of the other regarding behaviours resulting in an increasing of well being (welfare) of the non-kin, non familiar or even different species agents (e.g. helping a drowning chimpanzee by another chimpanzee; a chimp helping a bird).[16] Exemplary use of this type of definition may be found in M. Bekoff's and J. Pierce's statement, that morality is "a suite of interrelated other-regarding behaviours that cultivate and regulate complex interactions within a social group."[17]

On a different level of analysis, one may distinguish the so-called **(socio) functional** definitions where morality is treated holistically as a specialized subsystem within a social system fulfilling functions such as making possible social integration, coordination and cooperation. A functional understanding of morality involves interpreting its consequences for the larger social structures in which they are implicated. For example, according to D. Copp, morality plays a cooperative and coordinating function.[18] "The currency of a moral code" makes possible the reduction of conflicts, enhances cooperation and maximizes the realization of individual needs and values. According to the famous primate researchers, morality arose from a silent agreement enabling individuals to take pay offs from "co-operative sociality." Simply put – "morality plays a social function."[19] In opposition to the functional definitions, the so-called **individual** (or interactive) level definitions do not link moral phenomena with functional imperatives of social system but treat it as something connected with the self-perfection process of a particular individual, as a quality possessed by individuals. Morality is analyzed at the individual level, without searching for holistic implications for the social system. E. Turiel codified this individual-centred view of morality

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estimation of the values determining what is right and wrong, autonomous choice between alternatives; self-experience and fulfillment of moral obligation.

[14] P. Kitcher, *Ethics and Evolution: How to Get Here from There* [in:] *Primates and Philosophers*, Princeton University Press, Princeton 2006, pp. 132–133.

[15] H. Lyna, B. Franksc, E.S. Savage-Rumbaughb, *op.cit.*, p. 214.

[16] Generally speaking, according to F. de Waal's anecdotal report of "the survival of the weak, the handicapped, the mental retarded, and others who posed a burden was depicted as the first appearance on the evolutionary scene of compassion and moral decency" (*op.cit.*, p. 7).

[17] M. Bekoff, J. Pierce, *op.cit.*, p. 7.

[18] D. Copp, *Morality in a Natural World*, Cambridge University Press, Cambridge 2007, p. 13.

[19] F. de Waal, J. Flack, *op.cit.*, p. 29. According to the different socio-funcional approach the functions of morality are: social ordering, maintenance and preservation of the community (D. Harnden-Warwick, *op.cit.*, pp. 29–30), increasing help and increasing predictability in helper or competitor (H. Kummar, *op.cit.*, p. 44), conflict resolution (Ch. Boehm, *op.cit.*, p. 144), promotion of cooperation and harmony (F. de Waal, *Primates and Philosophers*, pp. 162–163).

when he defined the moral domain as: "prescriptive judgments of justice, rights, and welfare pertaining to how people ought to relate to each other." The moral judgments are derived "from features inherent to social relationships – including experiences involving harm to persons, violations of rights, and conflicts of competing claims."[20]

Another type of definition refers to the driving forces, a stimulus for moral choices or behaviours. The so-called emotion-based or **affective** definitions pay attention to the intuitionist and emotional way of making moral action (the automatic moral emotion based behavioural responses) or judgment (the sudden appearance in consciousness an affective valence without any conscious awareness of purposes, intentions, reasons). The moral intuition has been defined as the sudden appearance in consciousness, or at the fringe of consciousness, of an evaluative feeling (like-dislike, good-bad) associated with emotions about the character or actions of a person, without any conscious awareness of having gone through the steps of search, weighing evidence, or inferring a conclusion.[21] According to this definition type, rational reflection is not necessary for morality.[22] Nevertheless "emotion" and "cognition" cannot fruitfully be contrasted, one may analytically distinguish so-called **rationalistic** definitions emphasise the role of self-reflective analysis, rational decision making processes and the rational thematization of emotions. In contrast to moral intuition, moral reasoning is a conscious mental activity that consists of transforming given information about people, situations, norms, consequences in order to reach a moral judgment or perform moral action. For example F. Ayala highlights three rationalistic elements of cognitive faculty necessary for morality: "(i) the ability to anticipate the consequences of one's own actions; (ii) the ability to make value judgments; and (iii) the ability to choose between alternative courses of action."[23]

When we look at definitions of morality, we may notice that in most cases behavioural and functional types are put together, just as the psychological and individual are. Such a simplification allows us to define four ideal types of morality definitions: (1) behavioural-functional and rationalistic, (2) psychological-individual and rationalistic, (3) behavioural-functional and affective, (4) psychological-individual and affective. Most definitions presented in the literature concerning the problem of morality in NHP might be ascribed to the psychological-individual and rationalistic or behavioural-functional and affective types. Using the former type of definition often leads to advanced scepticism and criticism or even precluding of morality existence in NHP.[24] Relying on the

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[20] E. Turiel, *The Development of Social Knowledge: Morality and Convention*, Cambridge University Press, Cambridge 1983, p. 3.

[21] J. Haidt, F. Bjorklund, *Social Intuitionists Answer Six Questions about Moral Psychology* [in:] W. Sinnott-Armstrong (ed.), *Moral Psychology*, vol. 2: *The Cognitive Science of Morality: Intuition and Diversity*, MIT Press, Cambridge 2008, p. 188.

[22] B.N. Waller, *op.cit.*, p. 345.

[23] F. Ayala, *What the Biological Sciences Can and Cannot Contribute to Ethics* [in:] F. Ayala, R. Arp (eds.), *Contemporary Debates in Philosophy of Biology*, Wiley-Blackwell, Oxford 2009, p. 317.

[24] E.g. D. Povinelli, L. Godfrey, R. Laurie, *The Chimpanzee's Mind: How Noble in Reason? How Absent of Ethics?* [in:] M.H. Nitecki, D.V. Nitecki (eds.), *Evolutionary Ethics*, State Uni-

psychological-individual and rationalistic definitions support the claim that humans and humans alone possess morality. Yet on the other hand, understanding morality in a functional-behavioural and affective way gives a much better basis for finding the basic elements or even genuine morality in NHP. Generally speaking, in a radical interpretation of the functional-behavioural account, the unique features of human morality are simply species – specific way of fulfilling functions common to all highly social animals. The difference between human morality and NHP morality is not only a matter of degree but the matter of species dependent way of fulfilling the same function. In accordance with it morality is treated as "broad adaptive strategy for social living that has evolved in many animals societies other than our own."[25] It leads some authors to point that "morality must be understood as species relative."[26] So there is not only cultural but also species specific variance in morality exhibition (the so-called inter species relativity thesis). This perspective centres on the fact that in their worlds, animals may indeed have their own form of genuine morality. The consequence of maintaining such a position is to recognize that "replication of the human moral precepts need not be a defining characteristic of the moral sense in different species."[27] Functional-behavioural definitions do not allow us to distinguish between either morality from pro-social behaviour and the non-moral normative faculty or moral norms from other social norms.

Even a mere look at the discussions over the question of NHP morality has shown that many irresolvable dilemmas, non conclusive disputes and blind alleys have their basis in definitional and conceptual weaknesses. Concluding, the main problems with defining morality in primatological and related literature are: (1) there is no commonly accepted definition of morality – the kind chosen determines the conclusions reached; (2) researchers do not specify in full what morality is, despite the fact that they present evidence for or against its existence in NHP; (3) authors most often give a set of requirements for morality but not "by genus and difference" definition; (4) in consequence there is no easy way to distinguish between morality and the necessary elements but not enough for it, as well as between morality and pro-social behaviour and a mere capacity for normative guidance; (5) it is often not explicitly articulated if authors write about morality or the capacities necessary for it; (6) authors write about "proto morality", "prerequisites for morality" or the "building blocks of morality" but at the same time commentators criticize the stronger thesis that morality exists in NHP.

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versity of New York Press, New York 1993, pp. 309–321; W. Güth, S. Güth, *Morality Based on Cognition in Primates*, "Journal of Consciousness Studies" 2000, vol. 7, no. 1–2, p. 44; J. Kagan, *Human Morality is Distinctive*, "Journal of Consciousness Studies" 2000, vol. 7, no. 1–2, p. 47; J. Joyce, *op.cit.*, pp. 75–85.

[25] M. Bekoff, J. Pierce, *op.cit.*, p. 3.

[26] B. Johnson, J. Pierce, *Morality in Animals: Yes, No, Maybe*, Paper Presented at Fifth Annual Joint Environmental Philosophy Meeting in Allens Park, Colorado May 27th–30th 2008, p. 3.

[27] D. Harnden-Warwick, *op.cit.*, p. 32.

Empathy in non human primates

Let us move from the definitional considerations toward an examination of the more specific arguments. The increasingly common opinion tells us that we should not explain in morality evolutionary terms without referring to emotions.[28] Generally speaking, the basic emotions are widely acknowledged to be adaptive mechanisms, each designed by biological natural selection to perform a task that involves physiological, psychological, and behavioural elements of the organism in such a way as to encourage it to respond adaptively to recurrent types of fitness-relevant threats and opportunities in the environment. Set against this background, studies conducted in primatology have been trying to describe a possible continuity from emotion, social emotions, moral emotions to complete morality. Some authors believe that a fundamentally important mechanism of any emotional response is the psychological process known as **empathy**.[29]

Empathy is a phylogenetically ancient and continuous phenomenon. Researchers think that the "empathetic" effect in mammals is mediated by common brain mechanisms. It reflects evolutionary continuity in a pro-social mechanism among many different species. Because empathy is grounded in the same neurological architecture as other pro-social behaviours such as trust and reciprocity it seems likely that a whole suite of interlinked behaviours have co-evolved in social mammals.[30] Empathy may be an important component of certain helping, cooperative and "moral" behaviours, by facilitating, for example, reciprocal altruistic interactions and forming trust-based relations (trust involves being able to assess the intentions and emotions of interaction partners). The capacity for more flexible, nuanced and complex empathic responses seems to be correlated with both social complexity and mental capacities.[31] Yet empathy

[28] Psychology has shown that human morality has to some degree emotional roots and an intuitive foundation (e.g. J. Haidt, F. Bjorklund, *op.cit.*). Neuroscience has proved that moral dilemmas activate emotionally involved brain areas (e.g. D. Loye, *The Moral Brain*, "Brain and Mind" 2000, vol. 3, pp. 133–150; J. Moll, R. de Oliveira-Souza, F. Krueger, J. Grafman, *The Neural Basis of Human Moral Cognition*, "Nature" 2005, vol. 6, pp. 799–809).

[29] S. Preston, F. de Waal, *Empathy: Its Ultimate and Proximate Bases*, "Behavioral and Brain Sciences" 2002, vol. 25, pp. 1–72; F. de Waal, *Putting the Altruism Back into Altruism: The Evolution of Empathy*, "Annual Review of Psychology" 2008, vol. 59, pp. 279–300.

[30] Empathy is possibly the basis of these pro-social behaviors, but it does not deny using it to manipulate and taking strategically games which needed highly complex mind reading capacities. The ability to read and understand intentions also facilitates manipulation and deception, and the capacity to imagine how one's own behavior affects others can lead to the most extreme forms of cruelty.

[31] As Preston and de Waal explain: "The emotional state of one individual has the potential to elicit a similar state in nearby individuals. This emotional linkage has been present in primitive forms through much of the evolutionary history of chordates in the form of alarm and vicarious arousal. This basic linkage was then augmented by enhanced cognitive and emotional abilities through evolution and extended ontogeny (development of the individual), allowing individuals to experience empathy in the absence of releasing stimuli, towards more distant individuals, and without being overwhelmed by personal distress" (*op.cit.*, p. 3).

is not a single phenomena, but a whole class of different processes. It occurs in nested levels, with the inner core a necessary foundation for the other layers. According to F. de Waal the inner core consists of relatively simple and cognitively basic forms of empathy such as **emotional contagion**, which are largely automatic and too rapid to control voluntary physiological mechanisms that "provides an observer (the 'subject') with access to the subjective state of another (the 'object') through the subject's own neutral and bodily representation."[32] A more complex physiological and psychological mechanism is concern for the other (**sympathetic concern**), that is the ability to perceive and perhaps represent another individual's emotional state and make behavioural attempts to ameliorate this state by enhancing his well being. The most complex form is the **perspective-taking** (capacity for attribution), in which an individual can fully adopt the other's perspective, using imagination with an understanding of the reasons. Evolution, of course, doesn't toss out one adaptation and replace it with another; it adds to and adapts existing structures and capacities. More complex forms of empathy have evolved from simpler, older forms which, in turn, probably stem from even more simpler and older mechanisms. According to F. de Waal's Russian Doll Model, higher cognitive levels of empathy have been built upon a firm, hard-wired basis.[33] Let us critically look to the presented evidence for empathy in NHP by referring only to most often mentioned and discussed experiments.

1. Emotional contagion

Emotional contagion is an "emotional state-matching of a subject with an object."[34] The emotional state of one individual, or even a whole group is being transmitted and in effect co-determines the emotional state of observer. On that level, the perception of the emotional state of another automatically activates shared representations which cause a matching emotional state in the observer. A relatively old experiment demonstrated emotional contagion by monkeys when another individual displayed emotional distress yet there have been no experiments with apes to date since the ethical restrictions neglect the repetition of this classic experiment.

J. Masserman, S. Wechkin, W. Terris experimentally investigated a basic form of "empathy" among rhesus macaques.[35] One monkey, the actor, was trained to pull on either of two chains to receive food. The experimenters altered the situation so that pulling the chain with the larger reward caused a monkey

[32] F. de Waal, *Homo homini lupus?...*, p. 27; see S. Preston, F. de Wall, *op.cit.*

[33] Thus empathy covers a wide range of phenomena related to emotional linkage, from the simple and automatic to the very complex and sophisticated. There is a considerable literature about the neural basis of empathy to be found in the so called mirror neutrons; see G. Rizzolatti, L. Craighero, *Mirror Neuron: A Neurological Approach to Empathy* [in:] J.P. Changeux et al. (eds.), *Neurobiology of Human Values*, Springer, Berlin 2005, pp. 107–123.

[34] F. de Waal, *Putting the Altruism...*, p. 282.

[35] J. Masserman, S. Wechkin, W. Terris, *'Altruistic' Behavior in Rhesus Monkeys*, "American Journal of Psychiatry" 1964, vol. 121, pp. 584–585.

in sight of the subject to be shocked. Another monkey, the receiver, was introduced in a cage, while the actor's chains were rewired. One chain would still deliver smaller-reward food to the actor, but the other administered both a larger food reward and an electric shock to the receiver. Most monkeys substantially reduced the number of pulls to the shocking chain. Researchers noticed that from the subjects which witnessed the shock of the conspecific, two-thirds preferred the nonshock chain even though it resulted in half as many rewards. Of the remaining third, one stopped pulling the chains altogether for 5 days and another for 12 days after witnessing the shock of the object. In a different experimental setting, macaques were fed only if they pulled a chain which caused an electric shock to an unrelated peer who was in plain view through a one-way mirror. Refusing to pull the chain meant starvation yet most monkeys routinely refused to pull the chain. Only 13% chose to gain food despite the causing of pain to a conspecific. Amazing 87% of macaques starved themselves to prevent the shock to the conspecific. Starvation was induced more by visual than auditory cues, was more likely in animals that had experienced shock themselves, and was enhanced by familiarity with the shocked individual. Monkeys who had been shocked before were significantly less likely to shock their neighbours, as were monkeys with prior social contact. The study showed that a hungry rhesus monkey would not take food if doing so subjected another monkey to an electric shock. The monkeys also refused to pull a chain that delivered them food if doing so gave a painful shock to a companion. This "empathetic" response was automatic, in most cases stronger than a food stimulus and leads to the improvement of other's states.[36]

We should point that vicarious distress shown in this experiment is not necessarily altruistic (in its biological and psychological meaning). Perhaps animals use the distress of others as a sign for danger. If an animal is peacefully foraging for food and it hears a conspecific cry or scream, it will probably stop foraging and seek a safe place, because the cry or scream indicates the presence of a danger. Failure to respond in this way would be profoundly maladaptive. Consequently, the possible interpretation of these experiments is that monkeys do not reveal much concern for their fellows. Even the monkeys who starved themselves may have done so because they were afraid of being shocked.

[36] Recent research goes even further. D. Langford and his colleagues (D.J. Langford et al., *Social Modulation of Pain as Evidence for Empathy in Mice*, "Science" 2006, vol. 312, pp. 1967–1970) demonstrate that mice suffer distress when they watch another mouse experience pain. The researchers discovered that mice who watch their peers in pain were more sensitive to pain themselves. A mouse injected with acid writhed more violently if his or her partner had also been injected and was writhing in pain. Not only did the mice who watched cagemates in distress become more sensitive to the same painful stimuli, they became generally more sensitive to pain, showing a heightened reaction, for example, to heat under their paws. The researchers speculated that mice probably used visual cues to generate the empathic response, which is interesting since mice normally rely most heavily on olfactory communication. This data was interpreted as a confirmation of the ancient, probably present in all mammals, roots of empathy.

2. Sympathetic concern

In certain circumstances, individuals are concerned about another's state and make behavioural attempts to ameliorate this state. It is a more sophisticated psychological mechanism which might lead to forms of empathic response in which the observer perceives the emotional state of another, "feels sorry for" this emotional state and tries to do something e.g. to alleviate the source of distress or offering comfort. So empathy may just remain a feeling state, but it also may motivate some action.[37] The best example of such a mechanism is active consolation, which means "reassurance by an uninvolved bystander to one of the combatants in a preceding aggressive incident."[38] In most cases, the third party goes over to the loser and gently puts an arm on his shoulders. It is not a kind of postconflict resolution and separation of the fighting sides. The target of the consolation is a party who has lost a meaningful fight or dispute. There is evidence that consolation reduces post conflict stress in a recipient of antagonistic aggression.[39] The argument is that to provide reassuring contact to a recipient of aggression, thus helping the recipient reduce its postconflict stress, a bystander may be required to perceive the distress of the recipient and act emphatically. F. de Waal asserts that the kind of empathy underlying consolation is more cognitively complex and more highly developed in great apes (chimpanzees, bonobos, and humans) than in monkeys where there is no proof of consolation existing.[40]

Yet there also exist different explanations of the evolutionary function of consolation. Perhaps consolation could be explained by individual fitness enhancement because chimpanzees are particularly responsive to the distress of not all but only valuable partners.[41] It may be part of an exchange system between partners – the consoler may derive benefits by receiving consolation or other valuable behaviour in the future. It has also been suggested that consolation

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[37] We know much about so called "warm-glow effect," that is pleasant feelings associated with improvement of another's condition. According to one of the latest findings, when human participants do good deeds they report feeling good. Subjects doing something good also show activation of reward-related brain areas; M. Steger, T. Kashdan, S. Oish, *Being Good by Doing Good: Daily Eudaimonic Activity and Well-being*, "Journal of Research in Personality" 2008, vol. 42, pp. 22–42.

[38] F. de Waal, *Primates and Philosophers*, p. 33. According to different definition consolidation is "affiliation directed from a third party toward the recipient of aggression;" O.N. Fraser, D. Stahl, F. Aureli, *Stress Reduction Through Consolation in Chimpanzees*, PNAS 2008, vol. 105, no. 25, p. 8557.

[39] O.N. Fraser, D. Stahl, F. Aureli, *op.cit.*

[40] F. de Waal, *Homo homini lupus?...*, p. 26. Monkeys seem to lack this particular level of empathy. For example, we know that Macaque mothers fail to comfort their own offspring after a fight. They do not display signs of distress when their offspring are targets of aggression nor do they increase post conflict affiliative contacts with their offspring, suggesting that they may be unable to perceive their offspring's need for distress alleviation; G. Schino, F. D'Amato, A. Troisi, *Maternal Aggression in Lactating Female Japanese macaques: Time Course and Interindividual Variation*, "Canadian Journal of Zoology" 2004, vol. 82, no. 12, pp. 1975–1979.

[41] O.N. Fraser, D. Stahl, F. Aureli, *op.cit.*; see contrary data in: R.M. Wittig, Ch. Boesch, *The Choice of Post-Conflict Interactions in Wild Chimpanzees (Pan troglodytes)*, "Behaviour" 2003, vol. 140, p. 1543.

reduces the likelihood of further attacks among all group members. Therefore it is advantageous to both consoler and recipient. According to another explanation, consolation in chimpanzees serves a protective function by specifically reducing the risk of the consoler becoming the target of further aggression from the original recipient of aggression. Simply "it avoids an opportunity of further aggression."[42] Moreover, Fraser et al. accurately point that "the bystander's behaviour and emotional state, however, are critical areas for further research to evaluate whether the consoler contacts the recipient primarily to reduce their own or the recipient's distress."[43] At first glance, consolation is the best candidate for the proof of the existence of sympathetic concern in chimpanzees, but from a closer look there are also a few different explanations which are possible as well.

3. Perspective-taking

The forms of empathy discussed above work relatively automatically and do not need complex cognitive abilities. However, when we talk about empathy as the capacity to understand the other, the adoption of the other's point of view, more advanced cognitive machinery is needed. It generates quite a new situation when we are using imagination and mental state attribution to take our empathetic perspective. Then perspective-taking not need to be necessarily based on direct presence of stimulus, but only on our mental representation of it. An example of such a capacity is target helping, that is "help and care based on cognitive appreciation of the other's specific need or situation."[44] The result of such help is the archiving of other's goals in even novel situations which needs an understanding of why the other's state arose. Target helping is cognitively (the helper must know something about the goal the other is attempting to achieve as well as the obstacles to that goal and also needs to be more situation responsive and flexible) and motivationally (the helper must exert effort to help another person – with no immediate benefit to oneself) complex behaviour.[45] It requires the distinction between the self and the other that enables the other's situation to be separated from ones' own as a base for non automatic "empathetic" reaction on changes in the other's state.

One way to determine if target helping exists in NHP is to design a comparative experimental setting with some NHP species and human infants.[46] As opposed to the previous experiments, F. Warneken and M. Tomasello did not use food and examined helping a human rather than a conspecific because it is

[42] R.M. Wittig, Ch. Boesch, *op.cit.*, p. 1529.

[43] O.N. Fraser, D. Stahl, F. Aureli, *op.cit.*, p. 8561.

[44] F. de Waal, *Putting the Altruism...*, p. 285.

[45] Most scientists think that target helping requires the possession of a capacity of mirror self recognition (MSR). In his classic paper G. Gallup proposed phylogenetic coemergence between the development of perspective-taking and the emergence of MSR.

[46] As the authors claim "such a comparison may enable us to distinguish aspects of altruism that were already present in the common ancestor of chimpanzees and humans from aspects of altruism that have evolved only in the human lineage;" F. Warneken, M. Tomasello, *Altruistic Helping in Human Infants and Young Chimpanzees*, "Science" 2006, vol. 311, p. 1301.

possible that helping behaviour is more likely when they involve objects that are not food. They created four categories of situations: out-of-reach objects, access thwarted by a physical obstacle, achieving a wrong (correctable) result, and using wrong (correctable) means. They then tested preschool age infants and human-raised juvenile chimpanzees in each protocol. In the reaching problem, all chimpanzees helped reliably in the five tasks but the chimpanzees did not help reliably in the other types of experimental situation – that is, in those involving physical obstacles, wrong results, or wrong means. As the authors put it, "children and chimpanzees are both willing to help, but they appear to differ in their ability to interpret the other's need for help in different situations."[47] Apes possess some capacities for target helping but they do not possess enough developed abilities of the mental reading of others.[48]

The next experiment, conducted at the Ngamba Island Chimpanzee Sanctuary in Uganda, tested if semi-wild chimpanzees spontaneously target help both humans and conspecifics regardless of reward prospects.[49] The investigators set out to determine the precise circumstances under which chimpanzees are willing to assist either humans they barely knew or conspecifics on whom they had never depended. The authors also tried to rule out the role of immediate return-benefits by manipulating the availability of rewards. Different experimental protocols were conducted. In the first setting, the chimpanzee saw a person unsuccessfully reach through the bars for a stick on the other side, too far away for the person, but within reach of the ape. The chimpanzees spontaneously helped the reaching person regardless of whether this yielded a reward or not. A similar experiment with 18-month-old children gave exactly the same outcome, but the replication of the experiment with capuchin monkeys showed that, contrary to chimps and children, capuchins look for their own personal pay-offs.[50] Obviously, both apes and young children (but not capuchins) are willing to help, especially when they see someone struggling to reach a goal. The second experiment increased the cost of helping. The chimpanzees were still willing to help, however, even though now they had to climb up a couple of metres and the children still helped even after obstacles had been put in their way. Rewards had been eliminated altogether this time, but this did not change the chimps and children helping behaviour[51] as opposed to capuchins which "seem to be very sensitive to the amount of effort required to help."[52] This seems to suggest that apes target helping, as opposed

[47] *Ibidem*, p. 1302.

[48] This conclusion should be referred to the broad discussions over the possession of mind reading capacities (sometimes called theory of mind) by NHP.

[49] F. Warneken, B. Hare, A.P. Melis, D. Hanus, M. Tomasello, *Spontaneous Altruism by Chimpanzees and Young Children*, "PLoS Biology" 2007, vol. 5, p. 184.

[50] J.L. Barnes et al., *Helping Behaviour and Regard for Others in Capuchin Monkeys (Cebus apella): An Evolutionary Perspective on Altruism*, "Biology Letters" 2008, vol. 4, no. 6, pp. 638–640.

[51] According to one interpretation, chimpanzees living in a Ngamba sanctuary help humans because they depend on them for food and shelter. Authors suggest that the use of food rewards in experimental studies like this one may obscure the propensity for helpful behavior because chimpanzees treat all interactions involving food as part of a zero-sum game.

[52] J.L. Barnes et al., *op.cit.*, p. 639.

to monkeys, is not based on a cost/benefit calculation, as is so often assumed.[53] The responses observed in these experiments have been interpreted by authors as genuinely other-oriented. Obviously apes possess capacities for target helping in simple situations without the prospect of a reward but in more complex experimental settings they could not adequately "read the others mind" and, in effect, could not target help.

The mushrooming literature on NHP's empathy has given a new set of interesting hypothesis that should be critically analyzed or even falsified. I have shown that Waal's theory, while very attractive from the first look, raises many doubts, questions and also alternative and simpler explanations after more comprehensive exploration.

Sense of fairness and fairness-related emotions

The problem of the existence of a "minimal sense of fairness" in NHP constitutes the next strongly discussed issue. F. de Waal and his colleagues have long argued that such moral component and numerous fairness-related emotions are homologous to psychological systems in other primates.

The first experiment examining explicitly how non human primates respond when treated unfairly was conducted by J. Brosnan and F. de Waal.[54] The experimental design consisted of putting capuchin monkeys in two adjacent cages. The monkeys had been trained to exchange coins for food with the human experimenter. They are given a coin and have to give it back in order to receive a piece of food, which is visible in a transparent bowl in front of them. In one condition, the two capuchins are given a similar reward, a piece of cucumber. In a second condition, one monkey receives a piece of cucumber, while the second monkey receives a piece of grape – a highly valued food. In a third condition, designed to elucidate the role of effort, one monkey receives a piece of cucumber, while the second monkey is given a piece of grape without having to exchange it for a coin. The four conditions were designed to elucidate the effect of the presence of the reward on subject behaviour – grapes were visible but not given to another capuchin. The question was whether capuchin monkeys exhibit inequality aversion [IA] treated as a building block of the sense of fairness. There are two kinds of inequality aversion: disadvantageous IA – disliking it if another individual

[53] The third and final experiment tested the chimps' willingness to help using more complex experimental design. One chimpanzee (Partner) tried to enter a closed room with food. The Observer would watch his attempts. The only way for the Partner to enter this room would be if a chain blocking the door were removed. This chain was beyond the Partner's control and only the Observer could unlock it. So there is a situation in which all of the food would go to the Partner, thus may potentially cause some emotional response (envy) in the Observer. The results surpassed expectations because Observers removed the peg holding the chain, and in effect yielding their Partner access to the room with food. Generally one would think that rewards, even if not strictly necessary, would at least stimulate helping behaviour, but in fact they seem to play no role at all.

[54] S. Brosnan, F. de Waal, *Monkeys Reject Unequal Pa*y, "Nature" 2003, vol. 425, pp. 297–299.

receives more than yourself, and advantageous IA, disliking it if you receive more than another individual. To measure the rate of rejection by monkeys as an indicator of the IA, the cases where the monkeys do not exchange the coin or throw it away were numbered. The results were surprising: female capuchins reject at a much higher rate the piece of cucumber when the other capuchin is given a grape for a coin and at an even higher rate when the other capuchin is given a grape for free. This was interpreted both as a proof of the existence of disadvantageous inequality aversion in capuchin monkeys and strong evidence for expectations about the fair distribution of food. This "finding suggests that precursors to inequity aversion are present in animals from which our lineage split millions of years ago." They did not arrive *de novo*, after all evolution works gradually step-by-step. According to F. de Waal, "the evolution of the fairness principle starting with resentment if you get less, then moving to concern about how others will react if you get more, and ending with declaring inequity a bad thing in general."[55] With cooperation comes increased sensitivity concerning who gets what for their effort.[56]

Similar results were received in experimental studies using the same protocol on chimpanzees.[57] This confirms that, like capuchin monkeys, chimpanzees operate at the level of disadvantageous IA, but not advantageous IA. Chimpanzees decline to complete the exchange interaction when their partner receives a superior reward for the same amount of effort. Furthermore, there is no effect of the subject's gender or their rank relative to their partner. Whereas the chimpanzees respond to reward discrepancies, they do not appear to respond to discrepancies in the level of effort. It is surprising, especially because researchers previously found evidence that capuchin monkeys do show such a discrimination. The authors found the strongest reactions to the exchange task with grapes and cucumber between chimpanzees who were least familiar with each other, whereas the members of a colony that had lived together for over three decades barely reacted at all. Chimpanzees respond to inequity in a variable manner, which could be caused by such variables as group size and group-specific traditions.

To fix a problem emerging from the possible intervention of the human exchanger on the monkey performances, J. Brosnan, J. Freeman, and F. de Waal[58]

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[55] F. de Waal, *Joint Ventures Require Joint Payoffs: Fairness among Primates*, "Social Research" 2006, vol. 73, no. 2, p. 363.

[56] S. Brosnan and F. de Waal even wrote about the norms of fair distribution, as well as evidence for social emotions similar to human moral outrage: "people judge fairness based both on the distribution of gains and on the possible alternatives to a given outcome. Capuchin monkeys, too, seem to measure reward in relative terms, comparing their own rewards with those available, and their own efforts with those of others. They respond negatively to previously acceptable rewards if a partner gets a better deal. Although our data cannot elucidate the precise motivations underlying these responses, one possibility is that monkeys, similarly to humans, are guided by social emotions. These emotions, known as 'passions' by economists, guide human reactions to the efforts, gains, losses and attitudes of others, *op.cit.*, p. 299.

[57] S. Brosnan, H. Schiff, F. de Waal, *Tolerance for Inequity May Increase with Social Closeness in Chimpanzees*, "Proceedings of the Royal Society B" 2005, vol. 272, pp. 253–258.

[58] S. Brosnan, C. Freeman, F. de Waal, *Capuchin monkey's (Cebus apella) Reactions to Inequity in an Unrestricted Barpull Situation*, "American Journal of Primatology" 2006, vol. 68, pp. 713–724.

developed a new study to investigate inequity aversion in capuchin monkeys. They used the already well established and checked "cooperative barpull situation." A team replaced the setting in which human experimenter was or wasn't giving a reward for exchange to the case when rewards were mechanically placed (or not) in a bowl as the result of a cooperative task. This enabled the subjects free access to the apparatus, which let them decide the conditions under which they were willing to participate, and rewards were either equitably or inequitably distributed. To receive food they should collaborate with a peer in pulling the bar. The authors predicted that (1) "pairs would be less likely to be successful in obtaining food in the unequal situation, in which the rewards differed, than in either the high- or low-value situations, in which the rewards were equal;" (2) "related individuals would be more successful in all situations."[59] Contrary to the first predictions, the capuchins did not alter their behaviour depending on the equity of the reward distributions in this cooperative task. Pulling success did vary with the baiting of the reward cups, but the key factor was whether high-value grapes were present in the test, not whether the reward cups were baited with the same food of either high or low quality, or with different-quality food (one high and one low quality). This differs from previous results that indicated distributional inequity, but may be explained by significant differences in the experimental settings.[60] So the reward distribution was not the major motivating force since the data shows no indication that the equity of reward distribution was a factor in whether a pair was successful in any given trial; rather, the presence or absence of high-value grapes appeared to matter the most. This result is somewhat different from previous findings, which suggested negative reactions to inequity. To some degree the second prediction was confirmed: related pairs were more than twice as likely to be successful at pulling in the tray as their unrelated counterparts.

The new experiment on capuchin monkeys was conducted to check a larger subject pool two hypothesis: greed and frustration.[61] According to the first, capuchin monkeys respond negatively to unequal reward distributions because of individual expectations of better rewards based on the past (frustration), according to the second because of the mere presence of such rewards (greed). Importantly, researchers used an experimental design ("exchange for tokens paradigm" instead of the "cooperative barpull situation") from the first Brosnan and de Waal's study which confirmed that capuchin monkeys show only one component of "fairness" – inequality aversion. The results show that capuchin monkeys react negatively to situations in which they receive a less-favoured reward than their partner for the same task, and "control procedures suggest that this response was solely due to the discrepancy between the monkey's own and the other's rewards and not to individual factors such as greed or frustration."[62] Energy expenditure significantly modifies the inequity response: greater individual effort increases

[59] *Ibidem*, p. 716.

[60] *Ibidem*, p. 721.

[61] M. van Wolkenten, S. Brosnan, F. de Waal, *Inequity Responses in Monkeys are Modified by Effort, but Not Other Individual Factors*, "Proceedings of the National Academy of Sciences" 2007, vol. 104, pp. 18854–18859.

[62] *Ibidem*, p. 18857.

the negative response to distributional inequity. Simply put, the sensitivity to reward inequity is combined with a sensitivity to individual energy expenditure. The authors found that there were no significant differences between male and female subjects in their performance.

In spite of enthusiastic conclusions emerging from Brosnan and Waal's first experiment, there are strong objections over the question as to whether their work really provides evidence that a specific sense of fairness is a homologue which is present among capuchins, chimpanzees and humans. Firstly, Brosnan and de Waal found no effect for male capuchins. This is curious if they have really identified a homologue of a human inclination to a fair distribution of windfall gains. However, among chimpanzees, there was no evidence of a sex differences in response.[63] The last study confirmed that capuchin males and females were equally likely to react to inequitable treatment.[64] Secondly, J. Henrich has noted a problem with Brosnan and de Waal's proposal.[65] He argues that humans tend to react very differently in similar conditions as female capuchins in the first experiment. When they are offered goods that they judge to be unfair, humans in many cultures reject this deal which causes a negative feeling in the person who offered the deal. However, when rejecting the deal does not hurt the person who offered the unfair deal, which is a situation analogous to the second and third conditions in Brosnan and de Waal's experiment, people tend to accept the deal, in sharp contrast with capuchins.[66] He cites evidence that humans will accept inequitable pay if they have no reason to think that rejecting that pay will have any impact on those who are receiving more. Moreover, Henrich and colleagues have documented that there is much cross-cultural diversity in the norms bearing on the distribution of windfall gains. Thirdly, we should note both that Brosnan, Freeman, and de Waal[67] failed to replicate capuchin monkeys' aversion to inequity in a different experimental design, as Bräuer, J. Call and M. Tomasello failed to replicate chimpanzees' aversion to inequity.[68] In studies which confirm the AI thesis, the responses were elicited in a situation in which the experimenter controlled the distribution and the primates had no control over the result. Fourthly, Brosnan and de Waal's experimental design has also been severely criticized. The problem with the application of Brosnan's studies of inequity aversion is confounded by the fact that the individuals could not

[63] S. Brosnan, H. Schiff, F. de Waal, *op.cit.*, p. 258.

[64] M. van Wolkenten, S. Brosnan, F. de Waal, *op.cit.*

[65] J. Henrich, *Inequity Aversion in Capuchins?*, "Nature" 2004, vol. 428, p. 139.

[66] J. Henrich et al., *"Economic Man" In Cross-Cultural Perspective: Behavioral Experiments in 15 Small-Scale Societies*, "Behavioral and Brain Sciences" 2005, vol. 28, no. 6, pp. 795–815; discussion, pp. 815–755.

[67] S. Brosnan, C. Freeman, F. de Waal, *op.cit.*, p. 724. In the most recent study have showed problem with finding a inequality aversion in capuchins and falsified negatively basic Brosnan and de Waal's hypothesis; A. Silberberg et al., *Does Inequity Aversion Depend on a Frustration Effect? A Test with Capuchin Monkeys (Cebus apella)*, "Animal Cognition" 2009, vol. 12, no. 3, pp. 505–509.

[68] J. Bräuer, J. Call, M. Tomasello, *Are Apes Really Inequity Averse?*, "Proceedings of the Royal Society B" 2006, vol. 273, no. 1605, pp. 3123–3128. They proposed "the food expectation hypothesis" which states that "seeing another individual receive high-quality food creates the expectation of receiving the same food oneself – and not inequity aversion."

directly correct inequitable outcomes; in fact, "by rejecting 'unfair' offers, they were actually increasing disadvantageous inequity."[69] Fifthly, C. Wynne notes that cucumber-receiving monkeys also refuse rewards in a control condition, in which they see grapes being placed in a pile nearby rather than seeing grapes being given to another monkey.[70] The natural interpretation is not that monkeys have a sense of equity, but rather that they will turn down mediocre rewards when something better is in view.[71]

Conclusions

The main question which is asked by primatologists concerns if and eventually to what degree NHP possess "moral precursors," "prerequisites for morality," "the evolutionary building blocks of morality"? It helps us to establish whether or to what degree our common ancestor was a "moral being" and contributes to the debate if and eventually to what extent morality is indeed an evolved trait or if it is a purely cultural phenomenon. The last problem refers to the questions of if (and eventually to what degree) morality is an inherent element of human nature and if (and eventually to what degree) we share our nature with other species, especially NHP. From the broadest philosophical perspective, primatologist's findings may contribute to the question as to how unique are human claims to be moral.

More precisely speaking, the studies on NHP are supposed to supply new data necessary for the answering of the question: what (if any) elements of moral domain constitute an **adaptation** (a trait whose evolution is the result of natural selection) in the homologous (traits that evolved in a common ancestor and that remain present in related species due to common phylogenetic descents) or analogous (similar traits that arose by convergent evolution due to the presence of similar selection pressures or evolutionary conditions) form. There is the second evolutionarily probable scenario: morality might be an **exaptation** (features of organisms that evolved because they served some function, but are later co-opted to serve a different function, which was not originally the target of natural selection). To sum up, studies in primatology should return to the question of whether morality is homologous, analogous for humans and NHP or constitutes an exaptation trait (or perhaps is a purely cultural product). Of course some primatologists defend the "homology" scenario (at least for some

[69] K. Jensen, B. Hare, J. Call, M. Tomasello, *What's In It for Me? Selfregard Precludes Altruism and Spite in Chimpanzees*, "Proceedings of the Royal Society B" 2006, vol. 273, p. 1013.

[70] C. Wynne, *Fair Refusal by Capuchin Monkeys*, "Nature" 2004, vol. 428, p. 140.

[71] This is simply an instance of the famous Tinklepaugh effect. Tinklepaugh in 1928 showed that monkeys will turn down an otherwise desirable food reward (lettuce), when a more desirable reward has been observed (bananas). Watching another monkey receive grapes is a more exciting stimulus; a moving conspecific is harder to ignore. In addition, while watching another monkey eat grapes, the capuchin with the cucumbers might become increasingly aware of the fact that she could be enjoying those grapes as well; O. Tinklepaugh, *An Experimental Study of Representative Factors in Monkeys*, "Journal of Comparative Psychology" 1928, vol. 8, pp. 197–236.

moral components e.g. sense of fairness)[72] but others prefer the "analogy" one.[73] Interestingly, there has been no analysis referring to the most probable exaptation hypothesis. I have shown that some traits (empathy, sense of fairness) that might seem to be good candidates for having evolved as an adaptation (homology or analogy) may, on further and deeper examination, turn out to be rather poor candidates. We should bear in mind that looking for homologues or analogies of the components of moral psychology is always a tricky business and requires careful attention to a range of data from multiple fields of scientific inquiry to ensure that there are no strong reasons to doubt that these components evolved. To understand why a specific trait evolved, one needs to recognize and clearly describe what was the fitness function of such a trait and how that trait functioned in its ancestral environment. Yet if one critically examines primatological literature on morality-related topics, he will find many ambiguities and a lack of a precise conceptual background. I think that it is time for primatology to move from the situation of many particular studies that are unrelated and not based on common definitional and methodological assumptions to the highly synchronized inter species project of searching "proto-morality" or "the evolutionary building blocks of morality" in NHP. The similar shift happened in the so-called cultural primatology, where interesting but inconclusive single experiments and field studies have been supplemented by multiannual, multinational and well-planned collaboration.[74]

[72] J. Flack, F. de Waal, *op.cit.*; F. de Waal, *Good Natured...*; *idem*, *Homo homini lupus?...*; *idem*, *Primates and Philosophers*; S. Brosnan, F. de Waal, *op.cit.*; Ch. Boehm, *op.cit.*; H. Lyna, B. Franksc, E.S. Savage-Rumbaughb, *op.cit.*

[73] H. Kummer, *Analogs of morality...*; M. Bekoff, J. Pierce, *op.cit.*

[74] See M. Stępień, *Kultura prymatów innych niż człowiek jako wyzwanie dla nauk społecznych (Non-Human Primates Culture as a Challenge to Social Sciences)*, "Studia Socjologiczne" 2008, vol. 4, no. 191, pp. 43–66.